

REMARKS

Claims 15, 17, 18, 24, and 25 are pending and have been rejected under 35 U.S.C. §103. Claims 1-14, 16, 19-23, and 26-29 have been cancelled in previous correspondence. Claims 15 and 25 are amended herein. Support for the amendment to these claims is found in at least paragraph [0009] of the specification. Claims 15, 17, 18, 24, and 25 remain for consideration upon entry of the present Amendment. No new matter has been added.

Claims 15, 17, 18, 24, and 25 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,609,524 to Ferrari (hereinafter “Ferrari ‘524”) in view of U.S. Patent No. 3,677,894 to Ferrari (hereinafter “Ferrari ‘894”) in combination with either U.S. Patent No. 5,437,747 to Adamson et al. (hereinafter “Adamson”) or U.S. Patent No. 5,329,566 to King (hereinafter “King”). The reasons for this rejection are the same as those stated in Section 10 of the Office Action dated November 2, 2007.

Claims 15 and 25 of the present application have been amended as indicated above.

Ferrari ‘524 fails to disclose, teach, or suggest a nuclear fuel rod for a boiling water nuclear reactor comprising a cladding tube and an initial fill gas arranged in the closed inner space of the cladding tube, the initial fill gas containing carbon monoxide, wherein the material of the cladding tube comprises sites capable of adsorbing hydrogen, the carbon monoxide of the initial fill gas being provided to block the sites, as recited in amended claim 15 and in amended claim 25. The carbon monoxide has an effect that does not in itself result in the oxidation of zirconium, but rather simply blocks the adsorption sites for hydrogen. The carbon monoxide is adsorbed in those positions on the zirconium surface where hydrogen would otherwise have been adsorbed in order to be absorbed by the zirconium material later. Thus, the adsorption of hydrogen is inhibited. This is in contrast to Ferrari ‘524 in which an oxide coating forms on the interior surface of the cladding and reduces the permeability of the cladding to tritium. The blocking of adsorption sites by carbon monoxide, as recited in claims 15 and 25, is not the formation of an oxide coating, as

in Ferrari '524, because the adsorption of carbon monoxide ahead of hydrogen is not the formation of an oxide coating.

Ferrari '894 also fails to disclose, teach, or suggest a nuclear fuel rod for a boiling water nuclear reactor comprising a cladding tube and an initial fill gas arranged in the closed inner space of the cladding tube, the initial fill gas containing carbon monoxide, wherein the material of the cladding tube comprises sites capable of adsorbing hydrogen, the carbon monoxide of the initial fill gas being provided to block the sites, as recited in amended claim 15 and in amended claim 25. Ferrari '894 discloses the decomposition of carbonyls into carbon monoxide to fill the unoccupied portions of the interior chambers of a fuel element, but no mention is made of using carbon monoxide to block sites capable of adsorbing hydrogen.

Furthermore, neither Adamson nor King disclose, teach, or suggest a nuclear fuel rod for a boiling water nuclear reactor comprising a cladding tube and an initial fill gas arranged in the closed inner space of the cladding tube, the initial fill gas containing carbon monoxide, wherein the material of the cladding tube comprises sites capable of adsorbing hydrogen, the carbon monoxide of the initial fill gas being provided to block the sites, as recited in amended claim 15 and in amended claim 25. Applicants understand that it is the Examiner's position that the primary and secondary references teach that it is necessary to determine an optimum proportion of carbon monoxide such that advantages are maximized and disadvantages are minimized. However, this does not appear to have any bearing on the use of carbon monoxide in an initial fill gas to block sites at which hydrogen is adsorbed, as recited in claims 15 and 25. An indication that the presence of carbon monoxide is undesirable as in Adamson or King is the opposite of the use of carbon monoxide in a fill gas to block adsorption sites. Therefore, Applicants maintain that the combination of either or both Adamson and King with either or both of the Ferrari patents is not proper.

Because none of Ferrari '524, Ferrari '894, Adamson, and King individually disclose, teach, or suggest a nuclear fuel rod for a boiling water nuclear reactor comprising a cladding tube and an initial fill gas arranged in the closed inner space of the cladding tube, the initial fill gas containing carbon monoxide, wherein the material of the cladding tube comprises sites capable of adsorbing hydrogen, the carbon monoxide of the initial fill gas being provided to block the sites, as recited in amended

claim 15 and in amended claim 25, none of these references in any combination would disclose, teach, or suggest such a nuclear fuel rod. Therefore, less than all the claim limitations are taught by the cited references individually and in combination. Consequently, because less than all of the claim recitations are taught by the cited references, Applicants' amended claims 15 and 25 are necessarily non-obvious, and Applicants respectfully request that the Examiner withdraw the rejections of claims 15 and 25.

Claims that depend from a claim that is non-obvious are themselves necessarily non-obvious. Because claims 17, 18, and 24 depend from claim 15, and because claim 15 is asserted to be non-obvious for the reasons presented above, claims 17, 18, and 24 are necessarily non-obvious. Applicants, therefore, respectfully submit that claims 17, 18, and 24 are allowable. Accordingly, Applicants respectfully request that the rejections of claims 17, 18, and 24 be withdrawn.

Applicants believe that the foregoing amendments and remarks are fully responsive to the Office Action and that the claims herein are allowable. An early action to that effect is earnestly solicited.

If the Examiner believes that a telephone conference with Applicants' attorneys would be advantageous to the disposition of this case, the Examiner is invited to telephone the undersigned.

Applicants herewith enclose the fees for the one-month extension of time and the Request for Continued Examination. Applicants believe that no other fees are due with the submission of this Amendment. If any charges are incurred with respect to this Amendment, they may be charged to Deposit Account No. 503342 maintained by Applicants' attorneys.

Respectfully submitted,

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